

THE fifth annual students' soirée of the Sir John Cass Technical Institute will be held on Saturday, March 17. The guests will be received by Sir Owen Roberts, chairman of the governing body, and Lady Roberts, Mr. George Baker, J.P., vice-chairman of the governing body, and Mrs. Baker. Short lectures and demonstrations on scientific subjects will be given during the evening.

At the last meeting of the council of the University of Birmingham several appointments to the staff were made. Mr. George S. West was appointed assistant lecturer and demonstrator in botany in succession to Dr. A. J. Ewart; Dr. Theodore Groom was appointed senior lecturer in geology and geography to succeed Prof. W. W. Watts, F.R.S., recently appointed to the chair of geology in the Royal College of Science, London; and Mr. Donald M. Levy was appointed demonstrator in metallurgy to succeed Mr. H. N. Schnurmann. Communications were received announcing the bequest by the late Mr. John Feeney of the sum of 20,000*l.*, a donation from Messrs. W. and T. Avery, Ltd., of 500*l.*, and valuable gifts from Messrs. Verity, Ltd., Mr. J. C. Vaudrey, and Mr. Willoughby Ellis. An assistant lectureship and demonstratorship in civil engineering was established.

For the last few years Oberlin College has been engaged, says *Science*, in raising a fund of 100,000*l.* This is now almost complete. The fund was started by an anonymous donor of Boston, who promised 20,000*l.* At the time of the trustees' meeting in November last the fund had reached 67,000*l.* Since then numerous gifts have been made, including 1000*l.* for library endowment, 400*l.* for additions to the women's gymnasium, 2000*l.* toward a men's building, 6600*l.* from the estate of Dr. C. N. Lyman, of Wadsworth, O., which will be devoted to library endowment, 15,000*l.* to be used as endowment for the Slavic department of the seminary, 2000*l.* for library endowment, and 1000*l.* for the art building. In the total of 97,000*l.* now raised is counted 25,000*l.* promised by Mr. Carnegie for a library, on condition that 20,000*l.* be raised for library endowment. To complete the fund, therefore, it will be necessary for the college to raise about 10,000*l.* more. It is expected that this will be done before commencement.

SOCIETIES AND ACADEMIES.

LONDON.

Chemical Society, March 1.—Mr. A. G. Vernon Harcourt, F.R.S., past president, in the chair.—Studies of dynamic isomerism, part iv., stereoisomeric halogen derivatives of camphor: T. M. Lowry. Measurements were given of the solubility in alcohol of α -chloro- and α -bromocamphors, $\alpha\beta$ - and $\alpha\pi$ -dibromocamphors, and $\alpha\beta$ - and $\alpha\pi$ -chlorobromocamphors, both alone and in presence of a small proportion of sodium ethoxide. The increase of solubility on addition of the alkali is ascribed to the formation in the solution of a small proportion of the stereoisomeric α' -compound.—The coagulating action of colloids, part i.: W. P. Dreaper and A. Wilson. The results obtained by the authors throw some light on dyeing and tanning processes. The influence of gallic acid in the manufacture of leather seems to be of a more direct nature than was previously supposed.—Studies on optically active carbimides, iii., the resolution of α -phenyl- α' -4-hydroxyphenylethane by means of *l*-menthylcarbimide: R. H. Pickard and W. O. Littlebury. The *l*-menthylcarbimides formed by combination with *l*-menthylcarbimide can be separated by fractional crystallisation, and are then hydrolysed by alcoholic sodium hydroxide.—Experiments on the synthesis of the terpenes, part viii., synthesis of the optically active modifications of Δ^3 -*p*-menthenol(8) and $\Delta^{3:8(9)}$ -*p*-menthadiene: F. W. Kay and W. H. Perkin, jun. Δ^1 -Tetrahydro-*p*-toluic acid, *l*- Δ^3 -*p*-menthenol(8), $\Delta^{3:8(9)}$ -*p*-menthadiene, and *d*- $\Delta^{3:8(9)}$ -*p*-menthadiene have all been synthesised. By fractional crystallisation of the brucine and strychnine salts of the first-named compound it was resolved into optical isomerides, and from these the two other compounds were prepared in an optically active condition.—Studies in the acridine series, iii., the methylation of chrysianiline: A. E. Dunstan and J. T. Hewitt.—Note on the application of the electrolytic method to the

estimation of arsenic in wall-papers, fabrics, &c.: T. E. Thorpe.—Nitrogen halides from camphoryl- ψ -carbamide: M. O. Forster and H. Grossmann. The action of potassium hypobromite and hypochlorite on camphoryl- ψ -carbamide has been found to give rise to dihalogen derivatives which have all the properties of compounds containing halogen attached to nitrogen.—The relation of position isomerism to optical activity, vi., the rotation of the menthyl esters of the isomeric chloronitrobenzoic acids: J. B. Cohen and H. P. Armes. In the present investigation the combined effect of the halogen and nitro-group on the activity of the menthyl group has been examined.

Mathematical Society, March 8.—Prof. W. Burnside, vice-president, and subsequently Sir W. D. Niven, vice-president, in the chair.—Sommerfeld's diffraction problem and reflection by a parabolic mirror: Prof. H. Lamb. Sommerfeld's problem is that of the diffraction of plane waves by a plane screen bounded by a straight edge. It is shown that Sommerfeld's solution may be arrived at in a simple way by combining certain simple particular solutions of the general equation of wave motion when expressed in terms of the coordinates that define two systems of confocal parabolic cylinders, the edge of the screen being the line of foci of the cylinders. Slightly modified forms of these solutions lead to a complete solution of the problem of reflection by a convex mirror in the form of a parabolic cylinder. It appears that in this application of the wave theory the reflected waves, which the ordinary processes of geometrical optics represent as diverging from a line of sources coinciding with the line of foci of the cylinder, really diverge from a plane of sources, terminated in an edge at this line, and extending thence with continually diminishing strength to an infinite distance on the concave side of the mirror. The problems of reflection by concave parabolic and paraboloidal mirrors are also discussed.—Function-sum theorems connected with the series $\sum x^n/n^2$:

Prof. L. J. Rogers. The sums of the values of the function defined by the integral $\int_0^1 (1-x)^{-1} \log x dx$ for various sets of values of the argument are shown to have definite constant values.—Investigations on series of zonal harmonics: Prof. T. J. I'A. Bromwich. The paper relates to the behaviour of series of the type $\sum a_n r^n P_n(\cos \theta)$ in the neighbourhood of points on the boundary of the region of convergence.—The functions $\xi_p(x, \theta)$ and $\beta_p(x, \theta)$ Rev. E. W. Barnes. The paper deals with the asymptotic expansions of special types of integral functions.—The relations between the *p*-line determinants formable from a *p* by *q* array: Prof. E. J. Nanson.—An informal communication On the divisors of numbers of certain forms was made by Lieut.-Colonel A. Cunningham. The special forms are $q2^q + 1$ and $(a^q + 1)^2 + 1$.—Dr. F. S. Macaulay made an informal communication On the equilibrium of forces of given magnitudes the lines of action of which pass through given points.

PARIS.

Academy of Sciences, March 5.—M. H. Poincaré in the chair.—The suboxides of carbon: M. Berthelot.—Some arithmetical consequences of the theory of Abelian functions: G. Humbert.—The propagation of a movement round a centre in an elastic, homogeneous, and isotropic medium: study of the wave produced without change of density: J. Boussinesq.—The bean containing hydrocyanic acid, *Phaseolus lunatus*: L. Guignard. Frequent cases of poisoning of animals by this bean have occurred, due to the hydrocyanic acid it contains. This acid arises from a glucoside, phaseolunatine, which is present in the bean. Determinations of the amounts of hydrocyanic acid obtainable from beans from various sources gave figures varying between 0.006 per cent. and 0.102 per cent. A new method for detecting traces of hydrocyanic acid is given.—The synthesis of three dimethyl-cyclo-hexanols: Paul Sabatier and A. Mailhe. The method of Sabatier and Senderens has been applied to the addition of hydrogen to the three xlenols. Details of the preparation of these substances are given, together with their physical properties and those of their immediate derivatives.—The mag-

netic chart of the British Isles: B. **Baillaud** and E. **Mathias**.—Observations of the sun made at the Observatory of Lyons with the 16 cm. Brunner equatorial during the fourth quarter of 1905: J. **Guillaume**. Observations were possible on thirty-three days during the quarter. The results are given in three tables showing the number of spots, the distribution of the spots in latitude, and the distribution of the faculae in latitude.—The deformation of quadrics: Luigi **Bianchi**.—The singularities of solutions to some partial differential equations of the elliptic type: Serge **Bernstein**.—The measurement of the loss of phase by reflection: A. **Perot**.—The phenomena of phosphorescence: A. **Debierre**.—Contribution to the study of selenious anhydride: **Cécsner de Coninck**.—The iodomercurates of calcium and strontium: A. **Duboin**. Crystallised compounds were isolated possessing the composition $\text{CaI}_2 \cdot \text{HgI}_2 \cdot 8\text{H}_2\text{O}$ for the calcium salt, and $\text{SrI}_2 \cdot 5\text{HgI}_2 \cdot 8\text{H}_2\text{O}$ for the corresponding strontium salt.—The nature of the decomposition of an aqueous solution of copper sulphate by some alloys of aluminium: H. **Pechoux**. In a previous note these reactions have been studied from the qualitative side. The present paper is concerned with the quantitative aspect of the same reactions.—The estimation of cadmium: H. **Baubigny**.—The thermochemistry of the hydrazones and the osazones: Ph. **Landriou**.—The condensation of benzidine-aniline, diphenyl-bidiazaminobenzene, and diphenyl-disazoaminobenzene: Léo **Vignon**.—An antimony tartrate: J. **Bougault**. It is shown that the use of alcohol in the preparation of antimony tartrate leads to an impure product; similar objections do not apply to acetone.—The chemical study of the seeds known as Java peas: Émile **Kohn-Abrest**. Determinations of the amounts of hydrocyanic acid produced by various modes of treating the seeds.—The chemical characters of the wines arising from vines attacked by mildew: E. **Manceau**.—The evolution of the *Eccrina* of Glomeris: L. **Léger** and O. **Duboscq**.—A natural mollusc-bearing layer in the Macta, Algeria, and the effect of the nature of the flow of this river on the growth of the molluscs: J. **Bounhiol**.—The ferments of the placenta: MM. **Charrin** and **Goupil**.—The duration of persistence of the activity of the isolated heart: M. **Lambert**.—The influence of old age on the arterial pressure: A. **Moutier**.—A Miocene volcanic chain on the eastern border of the Limagne: Ph. **Glaudeaud**.—The discovery of two Cretaceous horizons in Morocco: W. **Kilian** and L. **Gentil**.—The grand cañon of Verdon, its age and formation: E. A. **Martel**.

DIARY OF SOCIETIES.

THURSDAY, MARCH 15.

ROYAL SOCIETY, at 4.30.—A Discussion of Atmospheric Electric Potential Results at Kew from Selected Days during the Seven Years 1898 to 1904: Dr. C. Chree, F.R.S.—On the Specific Heat of, Heat Flow from, and other Phenomena of the Working Fluid in the Cylinder of the Internal Combustion Engine: Dugald Clerk.
CHEMICAL SOCIETY, at 8.30.—The Interaction of well dried Mixtures of Hydrocarbons and Oxygen: W. A. Bone and G. W. Andrew.—The Explosive Combustion of Hydrocarbons: W. A. Bone and J. Drugman.—The Occurrence of Marsh Gas amongst the Decomposition Products of Certain Nitrogenous Bases as a Source of Error in the Determination of Nitrogen by the Absolute Method: P. Haas.—Studies on Comparative Cryoscopy. Part IV. The Hydrocarbons and their Halogen Derivatives in Phenol Solution: P. W. Robertson.—The Displacement of Acid Radicles. I. Displacement of the Chloride and Nitrate Radicles: A. F. Joseph.
ROYAL INSTITUTION, at 5.—The Physiology of Plants: Francis Darwin, For. Sec. R.S.
LINNEAN SOCIETY, at 8.—Discussion on the Origin of Gymnosperms: Opened by Prof. F. W. Oliver, F.R.S.
SOCIETY OF ARTS, at 4.30.—The Languages of India and the Linguistic Survey: Dr. George A. Grierson.
INSTITUTION OF MINING AND METALLURGY, at 8.—A Record of an Investigation of Earth Temperatures on the Witwatersrand Gold Fields, and their Relation to Deep Level Mining in the Locality: H. F. Marriott.—Note on the Ammonia-Copper-Cyanide Process: E. Le Gay Brereton.—The Cyanide Treatment of Cupriferous Tailings by the Sulphuric Acid Process: W. S. Brown.

FRIDAY, MARCH 16.

ROYAL INSTITUTION, at 9.—How to Improve Telephony: W. Duddell.
INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Continued Discussion: Large Locomotive Boilers. G. J. Churchward.—Probable Paper: Petroleum Fuel in Locomotives on the Tehuantepec National Railroad of Mexico: L. Greaven.
EPIDEMIOLOGICAL SOCIETY, at 8.30.—Evolution in Relation to Disease: Dr. J. T. C. Nash.

NO. 1898, VOL. 73]

SATURDAY, MARCH 17.

ROYAL INSTITUTION, at 3.—The Corpuscular Theory of Matter: Prof. J. J. Thomson, F.R.S.

MONDAY, MARCH 19.

SOCIETY OF ARTS, at 8.—Fire, Fire Risks, and Fire Extinction: Prof. Vivian B. Lewes.
ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—The Economic Geography of Australia: Prof. J. W. Gregory, F.R.S.
VICTORIA INSTITUTE, at 4.30.—The Early Celtic Church of Britain and Ireland: Eleanor H. Hull.

TUESDAY, MARCH 20.

ROYAL INSTITUTION, at 5.—The Influence of Geology on Scenery: Dr. J. E. Marr, F.R.S.
ZOOLOGICAL SOCIETY, at 8.30.
ROYAL HORTICULTURAL SOCIETY, Scientific Committee, at 4.—Mendelian Laws of Inheritance: Charles C. Hurst.
INSTITUTION OF CIVIL ENGINEERS, at 8.—The Outer Barrier, Hodbarrow Iron Mines, Millom, Cumberland: H. Shelford Bidwell.
MINERALOGICAL SOCIETY.—On the Occurrence of Linarite and Caledonite in Co. Wicklow: Arthur Russell.

WEDNESDAY, MARCH 21.

SOCIETY OF ARTS, at 8.—Motor Boats: Bernard B. Redwood.
GEOLOGICAL SOCIETY, at 8.—The Chalk and Drift in Möen: Rev. Edwin Hill.—On the Relations of the Chalk and Boulder-clay near Royston (Hertfordshire): Prof. T. G. Bonney, F.R.S.—Brachiopod Homöomorphy: Pygoe, Antinomia, Pygites: S. S. Buckman.
ENTOMOLOGICAL SOCIETY, at 8.
ROYAL MICROSCOPICAL SOCIETY, at 8.—A Contribution to our Knowledge of the Rotifera of South Africa: C. F. Rousselet.—On the Resolving Limits for the Telescope and the Microscope: E. M. Nelson.
ROYAL METEOROLOGICAL SOCIETY, at 7.30.—South Africa as seen by a Meteorologist: Dr. H. R. Mill.

THURSDAY, MARCH 22.

ROYAL SOCIETY, at 4.30.—Bakerian Lecture: Recent Advances in Seismology: Prof. J. Milne, F.R.S.
INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Electrical Equipment of the Aberdare Collieries of the Powell Duffryn Co.: C. P. Sparks.—Electric Winding considered Practically and Commercially: W. C. Mountain.
ROYAL INSTITUTION, at 5.—Internal Combustion Engines: Prof. B. Hopkinson.

FRIDAY, MARCH 23.

ROYAL INSTITUTION, at 9.—Imperial Defence: Lord Roberts.
PHYSICAL SOCIETY (University College), at 5.—On Unilateral Electric Conductivity over Damp Surfaces: Prof. F. T. Trouton, F.R.S.—The Construction and Use of Oscillation Valves for Rectifying High Frequency Electric Currents: Prof. J. A. Fleming, F.R.S.—On the Use of the Cymometer for the Determination of Resonance Curves: G. B. Dyke.
INSTITUTION OF CIVIL ENGINEERS, at 8.—Waves: F. K. Stevens.

SATURDAY, MARCH 24.

ROYAL INSTITUTION, at 3.—The Corpuscular Theory of Matter: Prof. J. J. Thomson, F.R.S.

CONTENTS.

	PAGE
Text-Books on Plain and Reinforced Concrete Work	457
Chemistry for Schools. By W. R. H.	459
Certain Modern Views on Pathology. By Prof. Wm. St. C. Symmers	460
Our Book Shelf:—	
Rohr: Die optischen Instrumente"	461
Hart: "Second Year Chemistry, a Handbook for Laboratory and Class Work."—A. S.	461
Varigny: "La Nature et la Vie"	462
Letters to the Editor:—	
A Plea for Absolute Motion.—Prof. Arthur Schuster, F.R.S.	462
The Diffusion of Solids.—John H. Howell	464
Earth Tremors in India.—Prof. W. Galloway	464
Peculiar Ice Formation.—James Foulds	464
Cooperation between Scientific Libraries.—Prof. Grenville A. J. Cole	464
Sounding Stones.—O. F. Wheeler Cuffe	464
An Inquiry for Books.—G. Hammam	464
A New County Bird-Book. (Illustrated.) By O. V. Aplin	465
The Adulteration of Butter. By C. Simmonds	466
A Remarkable Discovery in Egypt	468
Notes. (With Diagram.)	468
Our Astronomical Column:—	
Comet 1905c	473
Comet 1906b	474
Remarkable Variation in the Spectrum of ζ Bootis	474
A Brilliant Fireball	474
Observations of Phœbe during 1905	474
The Leeds Astronomical Society	474
New Magazines of Biological Chemistry	474
Forestry in the United States. (Illustrated.)	475
Forthcoming Books of Science	476
University and Educational Intelligence	478
Societies and Academies	479
Diary of Societies	480